WHAT IS CLAIMED IS:

1. A method, comprising:

receiving a plurality of packets;

classifying the packets according to a classification criterion;

sending a packet bundle to a host wherein the packet bundle is generated using packets

that are uniformly classified with respect to the classification criterion; and

receiving the packet bundle and the corresponding packet bundle descriptor; and

processing the packet bundle according to the corresponding packet bundle descriptor.

2. The method acording to claim 1, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the

host.

3. The method according to claim 2, wherein:

the classification criterion includes a session number; and

the pre-determined criterion includes a priority associated with a packet.

4. A method for an input and output controller, comprising:

receiving a plurality of packets;

classifying the packets according to a classification criterion; and

sending a packet bundle to a host wherein the packet bundle is generated using packets

that are uniformly classified with respect to the classification criterion.

5. The method according to claim 4, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the

host.

6. The method according to claim 5, wherein:

the classification criterion includes a session number; and

the pre-determined criterion includes a priority associated with a packet.

7. A method for a classification based packet transferring mechanism, comprising:

classifying the packets according to a classification criterion; and

sending a packet bundle to a host wherein the packet bundle is generated using packets

that are uniformly classified with respect to the classification criterion.

8. The system according to claim 7, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the

host.

9. The method according to claim 8, wherein:

the classification criterion includes a session number; and

the pre-determined criterion includes a priority associated with a packet.

10. The method according to claim 9, wherein the packet bundle descriptor includes:

a bundle descriptor providing information about the packet bundle; and

at least one packet descriptor each of which provides information about a packet in the packet bundle.

11. The method according to claim 10, wherein said bundle descriptor includes at least some of:

a number of packets in the packet bundle;

a session number identifying the session information of the packets in the packet bundle; and

a priority value specifying the priority of the packet bundle.

12. The method according to claim 10, wherein each of the packet descriptor includes at least some of:

a packet status;

a packet length;

a buffer address for the packet in the packet bundle; and

an out-of-order marking of the packet.

13. A method for a host, comprising:

receiving a packet bundle and its corresponding packet bundle descriptor;

processing the packet bundle; and

updating a packet session using the packet bundle according to the packet bundle

descriptor.

14. The method according to claim 13, further comprising:

identifying a session number from the packet bundle descriptor prior to said updating.

15. A system, comprising:

an input and output controller with a classification based packet transferring

mechanism for receiving packets and transferring a packet bundle with its corresponding

packet bundle descriptor; and

a host for receiving the packet bundle and its corresponding packet bundle descriptor

and for updating a session using the packet bundle based on the packet bundle descriptor.

16. The system according to claim 15, wherein the classification based packet

transferring mechanism comprises:

a packet classification mechanism for classifying received packets;

a packet grouping mechanism for generating the packet bundle using classified

packets and the corresponding packet bundle descriptor; and

a transfer scheduler for transferring, at a time determined based on a pre-determined

criterion, the packet bundle and the corresponding packet bundle descriptor to the host.

17. The system according to claim 16, wherein the host comprises:

a notification handler for receiving the packet bundle and its corresponding packet

bundle descriptor;

a packet bundle processing mechanism for processing the received packet bundle and

the corresponding packet bundle descriptor; and

a session updating mechanism for updating a session using the packet bundle

according to the packet bundle descriptor.

18. An input and output controller, comprising:

a packet receiver for receiving at least one packet; and

a classification based packet transferring mechanism for generating and transferring a

packet bundle and its corresponding packet bundle descriptor to a host.

19. The controller according to claim 18, the classification based packet transferring

mechanism comprises:

a packet classification mechanism for classifying received packets;

a packet grouping mechanism for generating the packet bundle based on classified

packets and the corresponding packet bundle descriptor; and

a transfer scheduler for transferring, at a time determined based on a pre-determined

criterion, the packet bundle and its corresponding packet bundle descriptor to the host.

20. The controller according to claim 19, further comprising:

a packet queue for buffering the received at least one packet; and

a packet queue allocation mechanism for allocating the packet queue prior to said

receiving the at least one packet.

21. A classification based packet transferring mechanism, comprising:

a packet classification mechanism for classifying at least one packet to generate

classified packets;

a packet grouping mechanism for generating a packet bundle using classified packets

and for constructing a corresponding packet bundle descriptor; and

a transfer scheduler for scheduling, determined based on a pre-determined criterion, to

transfer the packet bundle and the corresponding packet bundle descriptor.

22.   The mechanism according to claim 21, wherein the packet grouping

mechanism comprises:

a packet bundle generator for generating the packet bundle based on the classified

packets; and

a packet bundle descriptor generator for constructing the packet bundle descriptor.

23. A host system, comprising:

a notification handler for processing a notification for the arriving of a packet bundle and its corresponding packet bundle descriptor; and

a packet bundle processing mechanism for processing the packet bundle and the corresponding packet bundle descriptor.

24. The system according to claim 23, further comprising:

a session updating mechanism for updating a session using the packet bundle based on the processing result from the packet bundle processing mechanism.

25. A machine-accessible medium encoded with data, the data, when accessed, causing:

receiving a plurality of packets;

classifying the packets according to a classification criterion;

sending a packet bundle to a host wherein the packet bundle is generated using packets that are uniformly classified with respect to the classification criterion; and

receiving the packet bundle and the corresponding packet bundle descriptor; and

processing the packet bundle according to the corresponding packet bundle descriptor.

26. The medium acording to claim 25, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the host.

27. A machine-accessible medium encoded with data for input and output control, the data, when accessed, causing:

receiving a plurality of packets;

classifying the packets according to a classification criterion; and

sending a packet bundle to a host wherein the packet bundle is generated using packets that are uniformly classified with respect to the classification criterion.

28. The medium according to claim 27, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the host.

29. A machine-accessible medium encoded with data for a classification based packet transferring mechanism, the data, when accessed, causing:

classifying the packets according to a classification criterion; and

sending a packet bundle to a host wherein the packet bundle is generated using packets that are uniformly classified with respect to the classification criterion.

30. The medium according to claim 29, wherein said sending comprises:

determining the packet bundle for transfer according to a pre-determined criterion;

generating the packet bundle and its corresponding packet bundle descriptor; and

transfering the packet bundle and its corresponding packet bundle descriptor to the

host.

31. A machine-accessible medium encoded with data for a host, the data, when

accessed, causing:

receiving a packet bundle and its corresponding packet bundle descriptor;

processing the packet bundle; and

updating a packet session using the packet bundle according to the packet bundle

descriptor.

32. The medium according to claim 31, the data, when accessed, further causing:

identifying a session number from the packet bundle descriptor prior to said updating.